IN THE CLAIMS:

Please add the following claims:

51. (New) A catadioptric optical system comprising:

a catadioptric type optical system, which includes a lens element, a first reflecting surface and a second reflecting surface that reflects light coming from said first reflecting surface, light coming from said second reflecting surface passing said first reflecting surface off-axis thereof, at least one of said first and second reflecting surfaces being a concave reflecting surface, for forming an intermediate image from an object of a first plane surface; and

a refraction type optical system for forming a second image onto a second plane surface,

wherein, said catadioptric type optical system and said refraction type optical system are disposed between said first and second plane surfaces, and

said first plane surface, said second plane surface and an image plane of said intermediate image are parallel to each other.

52. (New) A catadioptric optical system according to Claim 51, wherein said catadioptric type optical system and said refraction type optical system are disposed on a single linear optical axis.

53. (New) A catadioptric optical system according to Claim 51, wherein said catadioptric type optical system includes a lens group including at least one positive lens, and said refraction type optical system includes an aperture diaphragm.

54. (New) A catadioptric optical system according to Claim 51, wherein an exit pupil of said catadioptric optical system is substantially circular.

55. (New) A catadioptric optical system according to Claim 51, wherein the following condition is satisfied:

$$0.04 < |fM1| / L < 0.4$$

wherein fM1 is a focal length of said concave reflecting surface of said first or second reflecting surface, and L is a

distance along the optical axis from said first surface to said second surface.

56. (New) A catadioptric optical system according to Claim 51, wherein the following condition is satisfied:

$$0.6 < |\beta M1| < 20$$

wherein ßM1 is a magnification of said concave reflecting surface of said first or second reflecting surface.

57. (New) A catadioptric optical system according to Claim 51, wherein the following condition is satisfied:

$$0.3 < |ß1| < 1.8$$

wherein ß1 is a magnification of said catadioptric type optical system.

58. (New) A catadioptric optical system according to Claim 51, wherein said catadioptric type optical system includes a lens group including at least one lens element whose surface is asymmetric, and said refraction type optical system includes at least one lens element whose surface is asymmetric.

59. (New) A catadioptric optical system according to Claim 51, wherein at least one of said first and second reflecting surfaces is a concave reflecting surface that corrects positive Petzval sum created by said lens element.

60. (New) A catadioptric optical system according to Claim 51, wherein the catadioptric optical system has both-sides telecentricity.

61. (New) A catadioptric optical system according to Claim 51, wherein said refraction type optical system includes two kinds of glass material.

62. (New) A projection exposure apparatus which projects a predetermined pattern on a mask onto a photosensitive substrate, wherein said catadioptric optical system according to Claim 51, projects said predetermined pattern onto said photosensitive substrate.